



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/760,025

01/16/2004

Khalil Najafi

UOM 0289 PUSP

8509

22045

7590

01/10/2005

BROOKS KUSHMAN P.C.
1000 TOWN CENTER
TWENTY-SECOND FLOOR
SOUTHFIELD, MI 48075

EXAMINER

KWOK, HELEN C

ART UNIT

PAPER NUMBER

2856

DATE MAILED: 01/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/760,025

Applicant(s)

NAJAFI ET AL.

Examiner

Helen C. Kwok

Art Unit

2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/17/04; 6/28/04
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Objections

1. Claims 1-33 are objected to because of the following informalities. Appropriate correction is required.

In claim 1, line 10, the phrase "the entire width" should be changed to – an entire width – to provide proper antecedent basis.

In claim 28, line 12, the phrase "the entire width" should be changed to – an entire width – to provide proper antecedent basis.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-33 are rejected under 35 U.S.C. 102(a) as being anticipated by the Publication titled "A Monolithic Three-Axis Silicon Capacitive Accelerometer With Micro-G Resolution" by Chae et al. (since no month is provided, the Examiner is going to assume the month is January of 2003).

The publication discloses a capacitive lateral accelerometer device having at least one electrode having a side surface normal to an input axis; a relatively large proof

mass having at least one side surface normal to the input axis such that a capacitive variation between the at least one electrode and the proof mass is obtained wherein the side surfaces are spaced apart to define a narrow, high-aspect ratio sensing gap and the proof mass forms a sense capacitor with the at least one electrode. Furthermore, the publication further discloses the features and characteristics of the capacitive accelerometer as presently claimed. (As observed in the figures and as described in the publication).

4. Claims 1-4, 6-11, 15-16, 18-19 and 21-27 are rejected under 35 U.S.C. 102(b) as being anticipated by JP 2001-264355 (Kato).

Kato discloses an acceleration sensor comprising, as illustrated in Figures 1-2, at least one electrode 16a, 16b having a side surface normal to an input axis; a relatively large proof mass 11 having at least one side surface normal to the input axis such that a capacitive variation between the at least one electrode and the proof mass is obtained wherein the side surfaces are spaced apart to define a narrow, high-aspect ratio sensing gap d and the proof mass forms a sense capacitor with the at least one electrode. (See, abstract).

With regards to claims 2-4, 6-11, 15-16, 18-19 and 21-27, Kato suggests and teaches the characteristics, dimensions and ratio of the proof mass, sensing gap, height of the electrode as presently claimed. (See, whole document).

5. Claims 1-27 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 6,035,714 (Yazdi et al.).

Yazdi et al. discloses a capacitive accelerometer comprising, as illustrated in Figures 1-5, at least one electrode 16 having a side surface normal to an input axis; a relatively large proof mass 12 having at least one side surface normal to the input axis such that a capacitive variation between the at least one electrode and the proof mass is obtained wherein the side surfaces are spaced apart to define a narrow, high-aspect ratio sensing gap 14 and the proof mass forms a sense capacitor with the at least one electrode. (See, column 5, line 55 to column 6, line 29).

With regards to claims 2-27, Yazdi et al. further suggests and teaches the characteristics, dimensions and ratio of the proof mass, sensing gap, height of the electrode as presently claimed. Furthermore, Yazdi et al. further discloses a support structure 22; springs 24 for suspending the proof mass; at least one stiffener 18. (See, column 2, line 30 to column 5, line 11; column 5, line 55 to column 7, line 42).

6. Claims 1-4, 6-11 and 15-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Publication titled "An Inertial Sensor Technology Using DRIE and Wafer Bonding With Interconnecting Capability" by Ishihara et al.

The publication discloses a micromechanical accelerometer comprising at least one electrode having a side surface normal to an input axis; a relatively large proof mass having at least one side surface normal to the input axis such that a capacitive variation between the at least one electrode and the proof mass is obtained wherein the

Art Unit: 2856

side surfaces are spaced apart to define a narrow, high-aspect ratio sensing gap and the proof mass forms a sense capacitor with the at least one electrode. (As observed in Figure 1).

With regards to claims 2-4, 6-11 and 15-27, the publication suggests and teaches the characteristics, dimensions and ratio of the proof mass, sensing gap, height of the electrode as presently claimed. (See, whole publication).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 28-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over either JP 2001-264355 (Kato) or U.S. Patent 6,035,714 (Yazdi et al.) or Publication titled "An Inertial Sensor Technology Using DRIE and Wafer Bonding With Interconnecting Capability" by Ishihara et al. in view of either U.S. Patent 4,711,128 (Boura) or DE 19750350 (Qu et al.) or Publication titled "A Monolithic Three-Axis Silicon Capacitive Accelerometer With Micro-G Resolution" by Chae et al.

With regards to claims 28-33, the only difference between the prior art and the claimed invention is having three individual single-axis accelerometers. The references, Boura, Qu et al., Chae et al., disclose three individual single-axis accelerometers on the

same substrate. It would have been obvious to a person of ordinary skill in the art to have readily recognize the advantages and desirability of employing three individual single-axis accelerometers as suggested by Boura, Qu et al., Chae et al. to the apparatus of Kato, Yazdi et al., Ishihara et al. to allow a redundancy to be obtained improving the reliability and functional testability for reasons of cost, performance, and space saving. Furthermore, to duplicate parts (i.e. multiple accelerometers) for a multiplied effect is well known. (Note: St. Regis Paper Co. v. Bemis Co., Inc., 193 USPQ 8, 11 (7th Cir. 1977)).

Conclusion

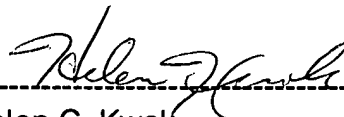
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helen C. Kwok whose telephone number is (571) 272-2197. The examiner can normally be reached on 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron E. Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

Art Unit: 2856

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Helen C. Kwok
Art Unit 2856

hck
January 4, 2005